The works of Brett Nortje part 71 [2nd of June 2014]

Diodes and droplets.

Quote by: **http://en.wikipedia.org/wiki/Electronic_component#Diodes**

Conduct electricity easily in one direction, among more specific behaviors.

So, this type of component will send electricity in only one direction at a time. this means that it connects and sends the electrons in the specified way. of course, with there being a switch to tell it to send what where, there needs to be a new innovation made here, if you ask me...

Now, to send the electricity in more then one direction at once, there needs to be more switches. if there are more switches though, they will just be more circuits, so, if you were to try to use one circuit instead of a whole lot, then it would be easier to do, but not cheaper for a long time. that said, is there anything wrong with using a diode? well, let's see if we can improve on it?

If you were to have a two way diode, you could have half the diodes, yes? if you were to have a two way diode, you would have a typical 'circuit connection' that would be like the ones on electric circuits in houses, if you know what i mean... of course, the way the diode conducts electricity is like a resistor, so we could just use resistors, which are cheaper, but we want to improve the circuit!

So, if we were to have a 'multi diode' or 'multiple resistor' we could squash more things onto the circuit. if the diodes were smaller, this could be done, but this research is expensive, so let's try to just mutilate the diode? then, the diode will have to be more useful, and will have to make multiple connections of either way in an instant or faster. of course, this is possible, as the diode, or if we throw this out we could use resistors, and then make the multiple connections either way. if the connection was given various frequencies, it could send multiple messages at a time and get them interpreted by the 'message collector,' yes? or, of course, they could group the message into like a 'droplet' that carries the message to the other end ahead of other droplets.

Now, to get the droplets to form, we need to use protons to 'encase th droplet.' or something that is opposite of electrons, like anti electrons. then we can send multiple messages over one diode or resistor.

Rectifiers.

Quote by: **http://en.wikipedia.org/wiki/Rectifier**

A rectifier is an electrical device that converts alternating current (AC), which periodically reverses direction, to direct current (DC), which flows in only one direction. The process is known as rectification. Physically, rectifiers take a number of forms, including vacuum tube diodes, mercury-arc valves, copper and selenium oxide rectifiers, semiconductor diodes, silicon-controlled rectifiers and other silicon-based semiconductor switches. Historically, even synchronous electromechanical switches and motors have been used. Early radio receivers, called crystal radios, used a "cat's whisker" of fine wire pressing on a crystal of galena (lead sulfide) to serve as a point-contact rectifier or "crystal detector".

Rectifiers have many uses, but are often found serving as components of DC power supplies and high-voltage direct current power transmission systems. Rectification may serve in roles other than to generate direct current for use as a source of power. As noted, detectors of radio signals serve as rectifiers. In gas heating systems flame rectification is used to detect presence of flame.

Because of the alternating nature of the input AC sine wave, the process of rectification alone produces a DC current that, though unidirectional, consists of pulses of current. Many *applications of rectifiers, such as power supplies for radio, television and computer equipment, require a steady constant DC current (as would be produced by a battery). In these applications the output of the rectifier is smoothed by an electronic filter to produce a steady current.*

A more complex circuitry device that performs the opposite function, converting DC to AC, is called an inverter.

This type of thingy is there to convert power types. if the power type is supposed to stop overheating, then they could just, instead of using metal which is a conductor, use o4 which is oxygen four, which is a conductor and will not overheat as easily. of course, this sounds expensive, so, they should rather use chemicals to convey the signal. this would mean, instead of using metal parts, they could use some sort of liquid chemical stuff.

But, that is not the issue here, rather how to 'convey power types.' what would happen if we were to send out power all over the circuit? they would all turn on and off, but, would it be random? setting the circuit so it is not random, but rather organized, would remove the need for rectifiers. say you have three switches? which one will go on or off? due to determinism, nothing is random, so finding out which ones go on first, and making a sequence, would eliminate a lot of things on the circuit.

Thermoelectric cooling.

Quote by: **http://en.wikipedia.org/wiki/Peltier_cooler**

Thermoelectric cooling uses the Peltier effect to create a heat flux between the junction of two different types of materials. A Peltier cooler, heater, or thermoelectric heat pump is a solid-state active heat pump which transfers heat from one side of the device to the other, with consumption of electrical energy, depending on the direction of the current. Such an instrument is also called a Peltier device, Peltier heat pump, solid state refrigerator, or thermoelectric cooler (TEC). They can be used either for heating or for cooling (refrigeration),[1] although in practice the main application is cooling. It can also be used as a temperature controller that either heats or cools.[2]

This technology is far less commonly applied to refrigeration than vapor-compression refrigeration is. The main advantages of a Peltier cooler (compared to a vapor-compression refrigerator) are its lack of moving parts or circulating liquid, near-infinite life and invulnerability to potential leaks, and its small size and flexible shape (form factor). Its main disadvantage is high cost and poor power efficiency. Many researchers and companies are trying to develop Peltier coolers that are both cheap and efficient. (See Thermoelectric materials.)

A Peltier cooler can also be used as a thermoelectric generator. When operated as a cooler, a voltage is applied across the device, and as a result, a difference in temperature will build up between the two sides.[3] When operated as a generator, one side of the device is heated to a temperature greater than the other side, and as a result, a difference in voltage will build up between the two sides (the Seebeck effect). However, a well-designed Peltier cooler will be a mediocre thermoelectric generator and vice-versa, due to different design and packaging requirements.[/quote]

I have an idea - how about send the heat out into 'limbo?' if we were to use magnets or electromagnetism, we could send the heat between two points, and watch it go away. if we were to put a small electromagnet at the right place, we could send it out of the appliance, yes?

Quote by: **http://en.wikipedia.org/wiki/Transistors**

A transistor is a semiconductor device used to amplify and switch electronic signals and electrical power. It is composed of semiconductor material with at least three terminals for *connection to an external circuit. A voltage or current applied to one pair of the transistor's terminals changes the current through another pair of terminals. Because the controlled (output) power can be higher than the controlling (input) power, a transistor can amplify a signal. Today, some transistors are packaged individually, but many more are found embedded in integrated circuits.*

The transistor is the fundamental building block of modern electronic devices, and is ubiquitous in modern electronic systems. Following its development in 1947 by John Bardeen, Walter Brattain, and William Shockley, the transistor revolutionized the field of electronics, and paved the way for smaller and cheaper radios, calculators, and computers, among other things. The transistor is on the list of IEEE milestones in electronics, and the inventors were jointly awarded the 1956 Nobel Prize in Physics for their achievement.

So, now we know what transistors do. basically, they come in two types; switch and amplifier. let's look at the switches first?

Transistor as a switch.

Transistors are commonly used as electronic switches, both for high-power applications such as switched-mode power supplies and for low-power applications such as logic gates.

In a grounded-emitter transistor circuit, such as the light-switch circuit shown, as the base voltage rises, the emitter and collector currents rise exponentially. The collector voltage drops because of reduced resistance from collector to emitter. If the voltage difference between the collector and emitter were zero (or near zero), the collector current would be limited only by the load resistance (light bulb) and the supply voltage. This is called saturation because current is flowing from collector to emitter freely. When saturated, the switch is said to be on.[29]

Providing sufficient base drive current is a key problem in the use of bipolar transistors as switches. The transistor provides current gain, allowing a relatively large current in the collector to be switched by a much smaller current into the base terminal. The ratio of these currents varies depending on the type of transistor, and even for a particular type, varies depending on the collector current. In the example light-switch circuit shown, the resistor is chosen to provide enough base current to ensure the transistor will be saturated.

In any switching circuit, values of input voltage would be chosen such that the output is either completely off,[30] or completely on. The transistor is acting as a switch, and this type of operation is common in digital circuits where only "on" and "off" values are relevant.

So, i guess the main problem here is finding a way to get the changes more easy to work with, so as to say that changes would be better resisted and reassigned. this would mean that they could handle more power coming through them, but, the main draw back i see is that it is only a switch that goes on or off. if it went to colors, or colors and all shades in between, the switch could change for the 'use.' but, that is hard to do with a switch, so, instead of being on or off, it could be set to conductor or off, which is basically what it does. if the switch could be set to 'skip' it could be on and skip the 'node' where it is. that would mean that circuits could run in a smaller area, no?

Now, to set it to skip, it would have to have two lines running through the switch, where one is connected to the 'device' and the other runs parallel to it.

Transistor as an amplifier

The common-emitter amplifier is designed so that a small change in voltage (Vin) changes the small current through the base of the transistor; the transistor's current amplification combined with the properties of the circuit mean that small swings in Vin produce large changes in Vout.

Various configurations of single transistor amplifier are possible, with some providing current gain, some voltage gain, and some both.

From mobile phones to televisions, vast numbers of products include amplifiers for sound reproduction, radio transmission, and signal processing. The first discrete-transistor audio amplifiers barely supplied a few hundred milliwatts, but power and audio fidelity gradually increased as better transistors became available and amplifier architecture evolved.

Modern transistor audio amplifiers of up to a few hundred watts are common and relatively inexpensive.

So, now we understand the transistors, but, there are a few problems with them...

Limitations

Silicon transistors can age and fail.[31]

High-power, high-frequency operation, such as that used in over-the-air television broadcasting, is better achieved in vacuum tubes due to improved electron mobility in a vacuum.

Solid-state devices are more vulnerable to electrostatic discharge in handling and operation

A vacuum tube momentarily overloaded will just get a little hotter; solid-state devices have less mass to absorb the heat due to overloads, in proportion to their rating

Sensitivity to radiation and cosmic rays (special radiation-hardened chips are used for spacecraft devices).

Vacuum tubes create a distortion, the so-called tube sound, that some people find to be more tolerable to the ear.[32]

Silicon transistors can age and fail, so maybe we need a new material? maybe if we were to use silicon 4, which would be like silicone compounded onto itself four times would be better?

Radio signals could be better sent if they were in transistor vacuums. this would mean finding the best of both for the new device, or, just taking a bit from here or there.

To insulate the transistor they need to use nitrogen 4 or helium 4, as that is a non conductor.

Being made out of advanced silicon will see the transistor overheat less, or, nitrogen or helium 4.

We need something immune to radiation. gamma rays are the only ones to worry about, so, if we were to observe that the material used must resist gamma rays, we would need to use something like a mirror or something that reflects the rays back out, like crystal or diamonds or something, or, maybe there is no such material? what reflects gamma rays? i would suggest they try to use the heaviest element on the table, or, even make up new ones until they find something that will repel the orbitals in the gamma rays.

For distortion, maybe we should spread the transistor over a bigger area?

Integrated analog circuits.

Quote by: **http://en.wikipedia.org/wiki/Analog_circuit**
An analogue signal uses some attribute of the medium to convey the signal's information. For example, an aneroid barometer uses the angular position of a needle as the signal to convey the information of changes in atmospheric pressure.[2] Electrical signals may represent information by changing their voltage, current, frequency, or total charge. Information is converted from some other physical form (such as sound, light, temperature, pressure, position) to an electrical signal by a transducer which converts one type of energy into another (e.g. a microphone).[3]

The signals take any value from a given range, and each unique signal value represents different information. Any change in the signal is meaningful, and each level of the signal represents a different level of the phenomenon that it represents. For example, suppose the signal is being used to represent temperature, with one volt representing one degree Celsius. In such a system 10 volts would represent 10 degrees, and 10.1 volts would represent 10.1 degrees.

Another method of conveying an analogue signal is to use modulation. In this, some base carrier signal has one of its properties altered: amplitude modulation (AM) involves altering the amplitude of a sinusoidal voltage waveform by the source information, frequency modulation (FM) changes the frequency. Other techniques, such as phase modulation or changing the phase of the carrier signal, are also used.[4]

In an analogue sound recording, the variation in pressure of a sound striking a microphone creates a corresponding variation in the current passing through it or voltage across it. An increase in the volume of the sound causes the fluctuation of the current or voltage to increase proportionally while keeping the same waveform or shape.

Mechanical, pneumatic, hydraulic and other systems may also use analogue signals.
With this type of 'circuit' it is a problem with the noise it generates. there are, as you may know, many different things you can use the analogue circuit for, so eliminating the noise would be good.

To get rid of the noise is hard, as the analog circuit is very sensitive and broad with it's input and output. so, we need to filter it out. i used two circuits for electronic voice phenomenon, with one carrying the noise and the signal and the other carrying the noise. then, just filter what they both hear out.